

What is claimed is:

1. A system providing a virtual private network service by using an IP network including a plurality of routers, wherein

a router, which accommodates a user of the virtual private network service, comprises a virtual router unit corresponding to each user of the virtual private network service, and

- the virtual router unit comprising

a routing table storing routing information for transferring a packet of a corresponding user, and

a routing unit controlling a transfer of a packet of a corresponding user by referencing said routing table.

2. The system according to claim 1, further comprising a setting unit setting up a control channel for transferring the routing information between virtual router units belonging to the same virtual private network.

3. The system according to claim 2, wherein the control channel is an IP tunnel.

4. The system according to claim 1, wherein:

identification information for identifying a virtual private network corresponding to a first virtual router unit arranged within a first router is broadcast from the first virtual router unit to other routers; reply information is returned from a virtual router unit, which belongs to a same virtual private network as a virtual private network identified according to the identification information, to the first virtual router unit; and

the first virtual router unit detects a configuration of a corresponding virtual private network based on the reply information.

5. The system according to claim 1, wherein:

identification information for identifying a virtual private network corresponding to a first virtual router unit arranged within a first router is broadcast from the first virtual router unit to other routers; reply information is returned from a second virtual router unit, which belongs to a same virtual private network as a virtual private network identified according to the identification information, to the first virtual router unit; and

a control channel for transferring the routing

information is set up between the first virtual router unit and the second virtual router unit.

6. The system according to claim 5, wherein:

5 the first virtual router unit has an authentication client unit making a request to authenticate the first virtual router unit; and

10 the second virtual router unit has an authentication server unit performing authentication of the first virtual router unit at the request of the authentication client.

7. The system according to claim 2, wherein

15 if one of a plurality of virtual router units belonging to a certain virtual private network is deleted, a control channel connected to the deleted virtual router unit is removed, and a configuration map representing a configuration of the virtual private network is updated in remaining virtual router units.

20

8. The system according to claim 7, wherein

the configuration map is updated after a predetermined time period elapses from when the control channel is removed.

25

5

10

said virtual router unit comprises

- a routing table storing routing information for transferring a packet of a corresponding user, and
- a routing unit controlling a transfer of a packet of a corresponding user by referencing said routing table.